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Serial No. 10/780,414
Response to Official Action

In the Drawings

Please amend FIGS. 1, 4 and 9 of the drawings as shown in the replacement sheets of the drawings enclosed hereto. Redlined and clean copies of the drawings are respectively enclosed.

Remarks

By the foregoing Amendment, claims 5, 16-23 and 29-35 are cancelled without prejudice, and claims 1, 6, and 8 are amended and new claims 36-40 are added. Claims 1-4, 6-15, and 36-40 are now pending in this application. No new matter is added by the amendments and supports thereof can be found from throughout the drawings, claims, and specification as originally filed. For example, the claimed features of new claims 38-40 are well described and illustrated, in particular, at paragraphs [00036] and [00041] along with the accompanied drawings thereof.

Applicant respectfully asks the Examiner to reconsider the application and Office Action in view of the foregoing amendments and the following remarks.

The drawings and specification are objected to because of certain informalities or deficiencies therein. Such deficiencies are corrected by the foregoing amendments in view of the objections.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. In particular, the Examiner has pointed out that "a control unit configured to display" is vague and indefinite because it is not known as to "what structure elements are in the control unit, further it is unclear as to what part of the control unit being configured...". Although Applicant respectfully disagrees with this rejection at least because the claimed feature and its structures are well described in the specification and drawings as originally filed to clearly define and specify the scope of the claimed language mentioned above, the terms in the claims are, however, amended by the foregoing amendments to better highlight the inventive features of the claims. Accordingly, this rejection is now moot and the claims are in condition satisfying the requirements under 35 U.S.C. 112, second paragraph.

Claims 1-15 are rejected under 35 U.S.C. 102(b) as anticipated by Hattori (US Patent No. 6,212,751). Claims 8-9 and 11-12 are further rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori (US Patent No. 6,212,751).

Independent claim 1 as amended requires, among other elements, (i) that a control unit have a display unit for displaying the surface images of the circuit board taken by the camera, in which the surface images include a first image representative of a portion of the surface of the circuit board and a second image representative of substantially the entire surface of the circuit board, (ii) that the control unit allow a user to allocate a plurality of support locations for supporting the circuit board with the back-up pins at locations not interfering with parts disposed on the circuit board while viewing the first image and the second image of the circuit board displayed on the display unit; and (iii) that a transfer member be coupled with the control unit for transferring a plurality of back-up pins from the back-up pin stand to the allocated support locations on the back-up pin plate.

Hattori (US Patent No. 6,212,751) discloses a method and an apparatus for examining a position of at least one board-support pin which is positioned on a board-supporting base for supporting a printed-circuit board under a back surface thereof. See the Abstract and Field of the Invention section of Hattori. More specifically, Hattori is particularly concerned for correcting the position of board-support pins (112) by a pin-position correcting device if the position of the pin positioned on a board-support base (110) is inappropriate based on a judgment made after positioning the pins on the base. See column 1, lines 32-58, and column 2, lines 1-38, for example.

However, Hattori does not disclose or suggest that its display device (186) can display the surface images of circuit board 24 in which the surface images include at least one image representative of a portion of the surface of the circuit board 24 and another image representative of substantially the entire surface of the circuit board 24.

Therefore, Hattori fails to disclose or teach the above-identified element (i) of the claims of the invention as amended. The Hattori reference teaches the use of a CCD camera 56, which takes only the image of the board-support pins 112 and reference board marks provided on the printed-circuit board so as to detect a position of the printed-circuit board for subsequent judgment and correcting the position of the board-support pins. However, contrary to the invention as claimed, the CCD camera 56 is not for taking any component images on the surface of the circuit board, such as the first image representative of a portion of the surface of the circuit board and the second image representative of substantially the entire surface of the circuit board, in order to allocate adequate support locations of the back-up pins at locations not interfering with the semiconductor components on the surface of the circuit board. See column 2, lines 51-58, and column 8, lines 4-6, of the Hattori reference.

Moreover, as discussed above, Hattori concerns only for correcting the position of board-support pins 112 after the pins are positioned on the pin support base 110 and is absolutely silent about allocating a plurality of support locations for supporting the circuit board with the back-up pins at locations not interfering with parts disposed on the circuit board while viewing the first image and the second image of the circuit board. Therefore, Hattori fails to disclose or teach the above-identified elements (ii) and (iii) of the claims of the invention as amended.

Contrary to Hattori, the present invention as claimed requires the novel features of allocating plural support locations of the back-up pins at locations not interfering with parts disposed on the circuit board while viewing at least the first image and the second image of the circuit board displayed on the display unit. According to the invention, since the support locations of the back-up pins are to be taught and appropriately allocated while viewing the first image and the second image of the circuit board before actual positioning of pins on the back-up pin plate, there is absolutely no need to

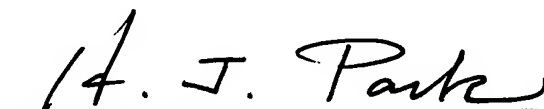
correct the positions of the pins after positioning the pins. Hattori is entirely ignorant of these novel aspects of the invention, but is directed to solve a different problem (i.e., correcting the positions of the pins after the pins are positioned) by a different means than the invention, such as by taking image of the reference board marks on the printed-circuit board but not of the component images of the board.

In view of the foregoing, Hattori fails to disclose or teach, among other elements, at least the above-identified elements (i)-(iii) of the claims of the invention as amended. Moreover, the invention as claimed is directed to substantially different means to solve a substantially difference problem than the reference of record. Therefore, independent claim 1 and its dependent claims (i.e., claims 1-4, 6-15 and 36-40) are patentably distinct over Hattori.

For the foregoing reasons, Applicant respectfully submits that all pending claims, namely claims 1-4, 6-15 and 36-40, are patentable over the references of record and in condition for allowance.

Respectfully submitted,

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FIG. 3

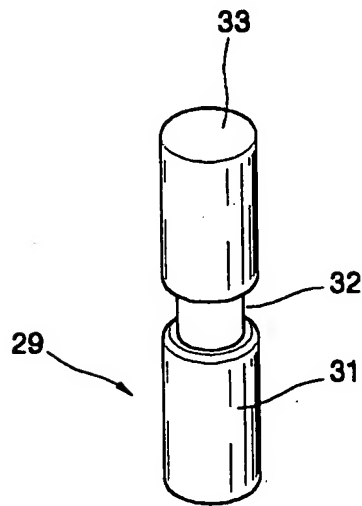
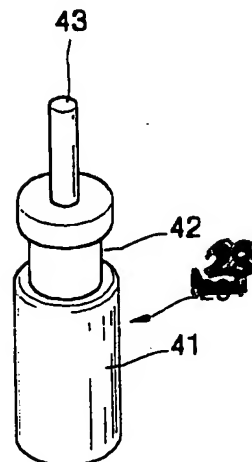


FIG. 4



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FIG. 9

